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MECHANICS.

161. Proposed by **W. J. GREENSTREET, A. M.**, Editor of The Mathematical Gazette, Stroud, England.

Four equal uniform smoothly jointed rods length a, and weight w, form a rhombus $ABCD$, A and C being in contact with two vertical walls b feet apart. An elastic string, natural length x, modulus λ, keeps the figure in position. The angle of friction at A and C is $\tan^{-1}p$. When the rhombus is just about to slip, find the angle A, and the angle between AB and the vertical.

162. Proposed by **B. F. FINKEL, A.M., M.Sc.**, Professor of Mathematics and Physics, Drury College, Springfield, Mo.

Show that the velocity, v, of a wave along the surface of a liquid whose depth is not less than the wave-length, λ, whose density is δ, and surface tension, T, is $v^2=\frac{g\lambda}{2\pi}+\frac{2\pi T}{\lambda\delta}$.

DIOPHANTINE ANALYSIS.

118. Proposed by **L. C. WALKER, A.M.**, Professor of Mathematics, Colorado School of Mines, Golden, Col.

Find the two least integral numbers such that their sum shall be a square, and the sum of their squares a biquadrate.

AVERAGE AND PROBABILITY.

147. Proposed by **W. J. GREENSTREET, A. M.**, Editor of The Mathematical Gazette, Stroud; England.

In a bag are n balls, known to be black or white, either color, *a priori*, equally likely. I draw two, which turn out to be one white and one black. I replace them and draw two more. What is the chance both are black?

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NOTES.

Professor Lon C. Walker has been elected Professor of Mathematics in the Colorado School of Mines, Golden, Colorado.

Dr. Saul Epsteen, of the University of Chicago, has very kindly consented to edit, for the coming year, the problems and solutions for the MONTHLY. So beginning with this issue all problems and solutions should be sent to him. The MONTHLY is to be congratulated that it has fallen into the hands of such able mathematicians as Drs. Dickson and Epsteen. We predict for it the most prosperous year in its history.

B. F. F.

ERRATA.

On page 171, problem 105, for "$a^{2m}+b^{2m}$" read $a^{2^m}+b^{2^m}$.